

Commentary on Sampling Results from 1 June

Test results from the grab sampling of ambient air conducted on 1 June returned detectable concentrations of both ammonia and hydrogen sulphide (H₂S) in most, but not all, of the samples that were downwind of the CWTP. Wind speeds were moderate throughout the sampling period although varied with location, and winds were from the NNE. Samples were only collected from locations downwind of the CWTP and ponds.

The test laboratory reports the measured concentrations in parts per billion (ppb). One ppb is equal to one-thousandth of a part per million (ppm) which is the unit used more commonly in publications. Therefore, the concentrations have been expressed as ppm rather than ppb in this memo.

As well referencing Environmental Health Standards which allow for 24hour exposures, Workplace standards are also referred to in this commentary as to take into account those people who spend less time in the area.

Comments on H₂S sampling results from 1 June

Some of the H₂S concentrations that have been measured in the ambient air downwind of the CWTP exceed the OEHHA air quality criteria for potentially causing headache, nausea, and physiological responses to odour (which is 0.03 ppm). However, the measured concentrations are much lower than the OEHHA acute exposure guideline levels for notable irritation and discomfort (which is 0.75 ppm) or more serious health effects (above 41 ppm). The measured concentrations are also much lower than the NZ Workplace Exposure Standard, which is 5 ppm.

The concentrations of H₂S measured on 1 June clearly show a decrease in H₂S concentrations with increasing distance from the CWTP.

Methyl Mercaptan

Methyl mercaptan was not detected in any samples this week - all samples were below the detection limit of 0.002 ppm. The New Zealand Workplace Exposure Standards, Edition 13 effective from April 2022, gives a workplace exposure standard for methyl mercaptan of 0.5ppm as an 8-hour average.

Methyl mercaptan is odorous at extremely small concentrations. Published odour threshold values for methyl mercaptan vary, but the compound can typically be detected as an odour at a concentration of about 0.0001-0.0005 ppm. The test method that the Council is using can measure methyl mercaptan concentrations down to as low as 0.002ppm, which is much lower than the workplace exposure standard but higher than the odour threshold - meaning the methyl mercaptan could be present in the ambient air, and causing noticeable odour, and not be able to be detected by the test method.

Ammonia

Ammonia was detected in many of the samples this week, with concentrations up to 0.211 ppm measured outside the CWTP boundary. This concentration is well below the OEHHA acute air quality criteria (4.6ppm) and the New Zealand Workplace Exposure Standard of 25ppm.